National Park Service

National Park Service
U.S. Department of the Interior

CAPE COD NATIONAL SEASHORE
LONG-TERM ECOSYSTEM MONITORING PROGRAM

PROGRAMMATIC STANDARD OPERATING PROCEDURES

Reporting the Results of Monitoring Projects (P3)

Version: 1
August 2005

1. Purpose and Applicability

Reporting is essential to satisfy two critical objectives of the CACO monitoring program:

- to convey results to park managers, other CACO staff, the NCBN, other parks, monitoring networks, and other interested entities; and
- to promote long-term project continuity by maintaining a clear record of the work accomplished, methods used, and results obtained.

This programmatic SOP establishes standards and guidelines for three types of required written reports:

- Monitoring reports - regular and timely reports of results and documentation of work accomplished;
- Analytical reports - in-depth and integrative analyses of trends, identification of causal factors, and comprehensive assessments of resource condition and ecosystem integrity; and
- Protocol review reports - in-depth assessments of the efficacy of monitoring methods, the validity of design assumptions, and the overall utility of the protocol for answering the monitoring questions.

Each protocol will include a reporting SOP which will incorporate this programmatic SOP by reference, and will provide additional specificity as appropriate.

2. Procedures and General Requirements

2.1 Monitoring Reports

2.1.1 <u>Purpose</u>: Monitoring reports are intended to provide regular and timely reporting of results and documentation of work accomplished.

2.1.2 <u>Audience</u>: The primary audiences for monitoring reports are CACO managers, other Natural Resource Management (NRM) Division staff, and future monitoring project managers and field crews. The Executive Summary should be written specifically for non-technical managers. The remainder of the report should be written for a technical audience. Other potential audiences include the Northeast Coastal and Barrier Network (NCBN), scientists and resource staff from other parks and networks, staff from CACO's Division of Interpretation and Cultural Resources, town governments, and other interested entities.

2.1.3 <u>Frequency and Timing</u>: Monitoring reports will be completed at a frequency commensurate with the frequency of data collection and will be specified in each protocol-specific reporting SOP. For example, kettle pond water quality data collection occurs annually so kettle pond water quality monitoring reports will be produced annually; pond vegetation data collection is likely to occur every five years so pond vegetation monitoring reports will be produced every five years. For protocols that involve data collection year-round every year, such as hydrology and atmospheric monitoring, reports will be produced annually. The period to be covered (eg October through September or January through December) will be specified in each protocol-specific reporting SOP. It is essential that monitoring reports are timely and keep pace with data collection. In general, review drafts will be due within four months of the conclusion of data collection or the end of the defined reporting period, and the final will be due within two to four months of the review draft. [See also the Review section below.]

2.1.4 Content: Monitoring reports will follow the general outline and provide the content summarized below. Adaptation and customization of this general outline are encouraged as needed to enhance organization, flow, and clarity. Additionally, if there is little change in implementation or findings from what was documented in previous reports, abbreviated reports are encouraged.

- *Executive Summary*: This should be a concise presentations of the report's major findings, conclusions, and recommendations. The executive summary should function as a briefing statement for the Superintendent and non-technical managers.

- *Introduction*: In addition to the routine elements of an introduction, the introduction in a monitoring report should establish a clear relationship to the protocol, should summarize the purpose of the monitoring project, and should restate the monitoring questions. The introduction should also provide the temporal context for the report. Specifically, the first monitoring report for a new project should include a brief history of protocol development; the first report for an ongoing project should include a brief history of the project's development and previous implementation. Subsequent reports should indicate how many years the project has been implemented and reference preceding reports.

- *Methods*: In monitoring reports, the purpose of the methods section is not to restate the protocol, but to describe how the protocol was implemented. Explicitly reference the protocol including all appropriate SOPs and version numbers, and document implementation of the specific elements of data collection called for by each procedure (eg sampling dates, which sites, maps of sites/sampling locations, number of samples/visits/transects/plots, instrument names and models, laboratory analysis method name/number/version/revision date, statistical software and analysis model names and versions, etc). If the protocol has not yet been converted to the National I&M Program format, this section should also supply any methodological detail lacking in the version of the protocol operational during the reporting period. Any problems encountered and solutions implemented should also be described (eg. lost plot markers, lost samples, equipment break-downs, anthropogenic site damage, etc). This section and the version of the protocol operational at the time should be viewed as companion documents which will provide specific and detailed history of exactly what was done and what methods were used.

- *Results*: In monitoring reports, presentation of results should emphasize data summaries, summary statistics, charts, graphs, and illustrative or exploratory analyses. In-depth trend analyses, hypothesis testing, and power analyses can also be included if the statistical methods used are specified in a peer-reviewed protocol, or have undergone peer review in previous reports. In general, in-depth, complex statistical analyses that have not been previously peer reviewed should be reserved for analytical reports. However, un-reviewed analyses can be included in monitoring reports provided appropriate external peer review occurs before the report is finalized, and provided the timeliness of the report is not compromised.

- *Discussion/Conclusions*: Monitoring reports should interpret the most recent data in view of results from previous years, and should discuss how the results address the monitoring questions. The organization of these sections should clearly highlight any conclusions regarding resource condition or ecosystem integrity, particularly those pertaining to declines or threats.

- *Management Recommendations*: If monitoring results and analyses indicate that specific management actions should be considered, those recommendations should be provided here. Similarly, this section should also include recommendations for any additional studies needed to answer questions raised by the monitoring results.

- *Future Monitoring Activities and Recommendations*: This section should summarize planned activities pertaining to the protocol such as the next scheduled round of data collection, steps that will be taken to correct problems, or planned in-depth or interdisciplinary analyses. Any recommendations regarding the protocol or its implementation should also be provided.

- *Acknowledgements*: Be sure to identify any cooperators, assistance from other parks or networks, external reviewers if any, and the sponsoring organizations of any interns.

A note regarding ancillary studies: Frequently, implementation of a monitoring protocol will be coupled with implementation of a study related to the protocol, such as testing alternative methods or collecting additional data to determine the utility of new or alternate parameters. These activities should be addressed in monitoring reports; however, it is important that a clear distinction is made between the hypotheses, methods, activities, results, and conclusions associated with implementation of the protocol and those related to the study. In most cases, this is best accomplished by reporting on the ancillary study in an appendix to the monitoring report.

2.1.5 <u>Format</u>: CACO monitoring reports should follow the general format guidance in the table below. Alternatively, if the author and the I&M Coordinator determine that the report will be suitable for publication as a Northeast Region Technical Report, the Northeast Region's Draft Final and Final Report Format and Content Guidelines should be followed. These guidelines can be found at http://www.nps.gov/nero/science/Guidelines.

General Format Guidance:

Drafts	-All drafts should have a header saying "DRAFT" followed by the date of the version being reviewed ("**DRAFT 1/15/05**"). The header should be in bold capital letters, and should appear on every page including the title page and appendices. -First review drafts can be double spaced if desired. Tables and figures can be in the back, but must still be referenced in the text. -Second review drafts should be in final format but retain the “DRAFT date” header.

Title Page	-Key elements are a title, picture, “Prepared By:” followed by the list of authors, the park address, month and year the report is finalized, and “Cape Cod Long-Term Ecosystem Monitoring Program, National Park Service, Department of Interior”. - See the 2003 pond breeding amphibian monitoring report an example.
Table of Contents	-See the 2003 pond breeding amphibian monitoring report for formatting.
Text	-The text for headers, the body of the report, and captions should be Times New Roman 12 point font. -Text should be left justified and single spaced, with two spaces between the ends and beginnings of sentences, and no hyphenation at the right end of a line.
Pages	-Margins: top and bottom, left and right = 1 inch -Page numbers go in the bottom center; the page that starts the introduction is page number 1. Use Roman numerals for preceding pages excluding the title page. -Adjust page breaks for minimum two line widow and orphan protection.
Headings	-Headings should be left-justified and appear as follows: **FIRST LEVEL HEADINGS: BOLD CAPS FOLLOWED BY BLANK LINE** **Second Level Headings: Bold, Lower Case with Each Word Capitalized Followed By Blank Line** <u>Third Level Headings: Underlined, sentence case followed by a blank line</u> *Fourth Level Headings: Italicized, sentence case; following blank line optional* -Beyond a fourth level, use your imagination.
Bullets & Numbers	-Use of bullets and numbers is encouraged as needed to maximize clarity. -Initial bullet and number settings should be: bullet position = 0, text position tab = .25 inch, text position indent = .25 inch. Subsequent nested bullets or numbering should be positioned in .25 inch increments.
Figures and Tables	-Within tables and figures, Times New Roman font is preferred but other fonts are acceptable if Times New Roman is not available in the generating software, or if an alternative font is necessary to make tables and figures easy to read. -Figures and tables that aid interpretation of the narrative or provide clear summaries of data should be imbedded as close to the referencing text as possible while maintaining reasonable page length. -If there are many similar figures or tables, select a representative few to imbed in the text, and put the rest in an appendix. -Large tables and those provided for reference should be put in an appendix. -Captions should include a title and should define acronyms or abbreviations not yet defined in the text. Collectively, the caption, legend, axis labels, and table headings should contain all the information the reader needs to understand the table or figure. - Figure captions go below the figures and table captions go above the tables.
Numbers and Measurements	-Measurements will be metric and should be spelled out at first use followed by the abbreviation in parentheses. After first use, measures will be abbreviated following a numeral and spelled out following a written quantity or if no quantity is given. -Numbers one through nine or at the beginning of a sentence should be written out; numerals are used for numbers above nine. -Coordinates must always be followed by the Datum in parentheses.
Species Names	-All nomenclature should follow ITIS. -The first occurrence of species names should appear as "common name (*Latin name*)". Common names should be lower case unless the name includes a proper noun (eg coho salmon, Steller sea lion). Subsequent occurrences can be "common name", "*Latin name*", or "*L. name*". Use what ever is most common in the literature of your discipline, but be consistent throughout the remainder of the report.

Abbreviations and Pseudonyms	-The first occurrence should be written out followed by the abbreviation or pseudonym in parentheses, eg. "Cape Cod National Seashore (CACO)". For the park, use "CACO", not "CCNS" or "Seashore".
Literature Cited	-Use standard journal format without indentation, eg: Redfield, A.C. 1972. Development of a New England salt marsh. *Ecological Monographs* 42: 201-237
Appendices	-Appendices should be numbered and have a title (eg "Appendix 1. Comparison of egg mass counting methods"). The appendix number and title should appear at the top of the first page, in bold, followed by at least one blank line. -Tables and figures in appendices should have captions and be numbered successively. -Page numbers should be continuous from the body of the report.

2.1.6 Review: The first review draft will be reviewed by the I&M Coordinator and at least one other CACO scientist. Review will also be requested from the NCBN; however, if they are unable to provide review and comment in the allotted time (generally 30 days), subsequent review and finalization may proceed without the NCBN comments. The first review will address all aspects of the report including content, scientific soundness, organization and clarity, style, grammatical soundness, and typographical errors. If comments are minimal or recommend minor substantive changes, the I&M Coordinator may determine that subsequent review is unnecessary and request that the author finalize the report. If a second review is warranted, the focus should be on those areas where substantive comment had been made during the previous review. If the report contains sensitive information or potentially controversial findings, the last draft will be forwarded to the Division Chief for management review. In general, thirty days should be allotted for each step (first review, revision, second review, finalization).

2.1.7 Production and Dissemination: When finalized, the primary author is responsible for seeing that the following actions are completed:

- File names for final versions of reports will start with "FYrMo" where the year and month correspond to the date the report was finalized. For example, if the 2005 amphibian monitoring work is reported in a document finalized in January of 2006, the file might be named "F0601_Amphibian_Monitoring_Report_2005".
- Two versions, one a .doc and the other a .pdf, will be placed in the "Reports" folder of the appropriate I&M Project folder on the NACL server (Y:\I&M_Projects . . .). A document summary will be created for the .doc version of the report [in Microsoft Word, go to File, Properties, Summary tab, complete the "Title", "Author", and "Keywords" fields].
- Within the appropriate "Reports" folder, a folder will be created named "Report_Graphics_YrMo" where the month and year correspond to the date the report was finalized (eg "Report_Grahpics_0601"). Copies of photos, charts, graphs, maps, or other graphics used in the report will be placed in this folder in their native formats.
- In addition, all relevant Data Management Standard Operating Procedures, such as those pertaining to file naming conventions, file and folder locations, and archiving, will be followed and are incorporated by reference. If there is any discrepancy between the procedures and guidelines in this programmatic SOP and those in the Data Management SOPs, the Data Management SOPs will be followed.

- Two versions, one a .doc and the other a .pdf, will be placed in the "Final Reports" folder in the "Resource Management" folder on the HQ server (G:\EVERYONE\Resource Management . . .).
- Three hard copies will be printed and bound (report binders are available from the I&M Coordinator or in the NACL Library). One of the bound copies will be accessioned to the library, one will be retained by the author, and one will be retained by the I&M Coordinator.
- A note will be submitted for Squad Notes announcing the completion of the report, its availability on the HQ server, and its pending accession to the library.
- A copy of the executive summary will be e-mailed to the Superintendent with a copy to the Chief of NRM. The e-mail will announce the completion of the report and its availability on the HQ server, and through the Division Chief, library, author, or I&M Coordinator.
- The Regional I&M and NCBN Coordinators will be notified of the availability of the report and electronic copies will provided if requested.
- A .pdf copy will be forwarded to whoever is maintaining the CACO I&M website for posting (check with the I&M Coordinator to verify who is maintaining the website).
- Printed or .pdf copies may be presented to other entities as determined by the author, I&M Coordinator, Division Chief, or Superintendent.

2.2 Analytical Reports

2.2.1 Purpose: Analytical reports are intended to provide in-depth and integrative analyses of trends, identification of causal factors, and comprehensive assessments of resource condition and ecosystem integrity.

2.2.2 Audience: The primary audiences for analytical reports are CACO managers, NRM Division staff, future monitoring project managers, and visiting and collaborating scientists. The Executive Summary should be written specifically for non-technical managers. The body of the report should be written for a technical audience. Other potential audiences include the NCBN, scientists and resource staff from other parks and networks, CACO's Division of Interpretation and Cultural Resources, town governments, the scientific community, and other interested entities.

2.2.3 Frequency and Timing: Analytical reports will be produced when monitoring data are sufficient to support in-depth and integrative analyses. This will be determined by the project manager in consultation with the I&M Coordinator.

2.2.4 Content: Analytical reports will follow the general outline and content guidelines provided above for monitoring reports with the addition of an Abstract. The Abstract should be written for a technical audience, and should be a concise (around 250 words) description of the objectives, methods, key results, and significant conclusions. Alternatively, the body of an analytical report may follow the guidelines of a target scientific journal with an Executive Summary added.

2.2.5 Format: Similarly, analytical reports will follow either the format provided above for monitoring reports, the NER Technical Report format guidelines, or the format guidelines of a target scientific journal. If the report will be submitted to a journal, "CCNS" or "Seashore" should be used as a pseudonym for the park rather than "CACO".

2.2.6 Review: Analytical reports will go through the internal review process described above for monitoring reports. However, after CACO and NCBN reviews have been completed, the report will be subjected to external peer review before being finalized. Peer review will proceed as follows:

- During the CACO review and revision process, the primary author will provide the I&M Coordinator with the names, titles, affiliations, brief overviews of qualifications as a peer reviewer, and contact information for at least four potential external peer reviewers.
- The I&M Coordinator will consult with the North Atlantic CESU Coordinator or other partners with relevant expertise regarding the suggested reviewers, and to identify additional potential reviewers if necessary.
- The I&M Coordinator will secure the assistance of at least three of the suggested reviewers, and will negotiate time-lines and payment if necessary.
- Peer review will be blind, unless otherwise requested by a reviewer, and will be coordinated by the I&M Coordinator. The I&M Coordinator will compile the reviewers' comments into a single document and provide a copy to the author.
- The author will revise the report as appropriate in light of reviewers' comments. Additionally, the author will provide a brief written response to each comment. Time frames for revision and response to comments will be determined on a case-by-case basis by the author and the I&M Coordinator.
- The I&M Coordinator will determine if additional review is required in light of the comments provided and the written response to comments prepared by the author.
- The reviewers' original comments will be retained in program files by the I&M Coordinator. The compiled comments and the author's response will be retained in the project files by the project manager.

2.2.7 Production and Dissemination: When finalized, the primary author will complete the production and dissemination actions specified above for monitoring reports.

2.3 Protocol Review Reports

2.3.1 Purpose: Protocol review reports are in-depth assessments of the efficacy of monitoring methods, the validity of design assumptions, and the overall utility of a protocol for answering monitoring questions. Based on the results of the protocol assessment, this report will also provide detailed and well-supported recommendations for protocol revision if appropriate. If revision is recommended, the protocol review report should complement the existing protocol narrative to support the recommended changes, or serve as a stand-alone narrative in a completely revised protocol.

2.3.2 Audience: The primary audiences for protocol review reports are NRM Division staff and future monitoring project managers. Other audiences include CACO managers, visiting and collaborating scientists, the NCBN, other parks, monitoring networks, and other entities with an interest in ecosystem monitoring.

2.3.3 Frequency and Timing: Ideally, each protocol should include recommendations regarding an appropriate time for evaluation. In absence of direction in the protocol, the timing of protocol reviews will be determined by the project manager and the I&M Coordinator. At a minimum, review should be considered after the first five years of data collection.

2.3.4 Content: Protocol review reports will follow the general outline and content guidelines provided above for monitoring reports. Notable distinctions include:

- the introduction should be very explicit about the protocol methods or design assumptions being evaluated;
- the methods section should focus on the analytical or statistical methods used to evaluate the protocol;
- the "Management Recommendations" section can be omitted; and
- the "Future Monitoring Activities and Recommendations" section should provide detailed and explicit recommendations for addressing any deficiencies in the protocol, and should provide all the supporting information necessary for developing detailed revisions to the protocol SOPs.

2.3.5 Format: Protocol review reports should follow the format guidelines provided above for monitoring reports.

2.3.6 Review: Protocol review reports will go through the internal (CACO and NCBN) and external peer review process described for analytical reports.

2.3.7 Production and Dissemination: When finalized, the primary author will complete the production and dissemination actions specified above for monitoring reports with the exception of the following naming and file/folder location differences:

- Two versions, one a .doc and the other a .pdf, will be placed in the "Protocol" folder of the appropriate I&M Project folder on the lab's server (Y:\I&M_Projects . . .). A document summary will be created for the .doc version of the report [in word, go to File, Properties, Summary tab, complete the "Title", "Author", and "Keywords" fields].
- Within the appropriate "Protocol" folder, a folder will be created named "Protocol_Graphics_MonYr" (eg "Protocol_Grahpics_Dec05"). Copies of photos, charts, graphs, maps, or other graphics used in the report will be placed in this folder in their native formats.

3. Revision log for P3: Reporting the Results of Monitoring Projects

Summary of Revisions	New Version Number	Effective Date
Original version finalized	Version 1	8/2005